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ABSTRACT

Education serves as the means for transmitting our culture and provides the foundation for our technological dynamism and high productivity. We rely on education to meet the economy's demands for an increasingly well-trained and sophisticated labor force. Education as a major industry, and a major growth industry in the United States, provided employment for 4.8 million people in 1966. Assigning a high priority to achieving goals in education would increase this total to an estimated 7 million by 1975. Employment opportunities for paraprofessionals and technicians in education in the coming decade are likely to reflect changes within the educational system and in the educational services offered to the community. It is further anticipated that more than a fourth of the 2.2 million employment growth in education between 1966 and 1975 will represent opportunities for aids, assistants and technicians in the nation's schools and libraries. Allowing for replacement needs, this implies an annual average of about 110,000 career openings in these fields in the coming decade. Research and planning to meet needs in the human service area constitute a significant priority for the vocational education system. (Author)

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# Nonprofessional Occupations in Education: Their Implications for Priorities in Vocational-Technical Education

Working Paper

by

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and

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## SUMMARY

Education in the United States has had many of the characteristics of a secular religion. The educational system serves as the means for transmitting our culture, and it provides the foundation for our technological dynamism and high productivity. We rely on our high schools, junior colleges, and universities to meet the economy's demands for an increasingly well-trained and sophisticated labor force. As our society becomes more committed to improving opportunities for persons in the "left-out" groups in American society, education and training have come to figure as the strategic ingredients in many national programs to expand opportunities for the economically and socially disadvantaged.

Education is a major industry, and a major growth industry in the United States. Total employment in the education industry amounted to 3.6 million in 1962 and it grew to 4.8 million by 1966. Assigning a high priority to achieving goals in education would increase this total to an estimated 7 million by 1975.(1) This estimate includes the nation's libraries as an integral part of the educational system.

Employment opportunities for paraprofessionals and technicians in education in the coming decade are likely to reflect changes within the educational system and in the educational services offered to the community. These changes are expected to include more widespread utilization of team

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(1) For sources, see Appendix Table 1.

teaching, audio-visual aides and computer-based technology, along with a large-scale expansion in pre-school and adult education, and an increased emphasis on school-community relationships. It is anticipated that more than a fourth of the 2.2 million employment growth in education between 1966 and 1975 will represent opportunities for aides, assistants and technicians in the nation's schools and libraries. Allowing for replacement needs, this implies an annual average of about 110,000 career openings in these fields in the coming decade. The federally-supported vocational-technical education system is currently involved in training few persons in the human service or technician occupations in education. Research and planning to meet needs in this area constitutes a significant priority for the vocational education system.

## EDUCATIONAL GOALS AND MANPOWER NEEDS

Our goals in education are to foster individual fulfillment, to strengthen our free institutions, and to develop educated and trained manpower for a changing labor force. These objectives take into account, as noted by the President's Commission on National Goals in the early 1960's, that education represents "an investment in the individual, in the democratic process, in the growth of the economy, and in the stature of the United States." (2) While recognition of the significance of education is apparent in the rapidly growing enrollment in higher education, and in the greater federal support for all levels of education, progress has been uneven for different groups, and as programs and expenditures have increased, aspirations have also risen. As a nation, we are no longer willing to tolerate the presence of large numbers of sixth graders in inner city schools who can only perform at a second grade level, or a situation in which 30 percent of our teenagers fail to finish high school, or a continuation of the statistic indicating that as recently as 1968 there were 23 million adults with less than an eighth grade education.(3)

One of the nation's primary goals in education is to significantly increase enrollment at the pre-school and kindergarten levels -- the age levels most important in influencing attitudes towards learning and the development of verbal skills. An important step forward has been made in this effort through

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(2) Goals for Americans, the Report of the President's Commission on National Goals, the American Assembly, 1960, p. 6.

(3) Tyler, Ralph, "Investing in Better Schools," in Agenda for the Nation, Brookings Institution, 1968, p. 208.

programs such as Head Start or those supported under Title I of the Elementary and Secondary Education Act. The equivalent of a high school education has already been extended by the mid-1960's to a majority of the persons 18 years or older in the labor force.(4) However, special programs will be required in the next decade to reduce the dropout rate, which is still nearly 1 million students a year, and to eliminate the differential in educational attainment based on race - a differential which for nonwhite males in the labor force amounted to 2 years less schooling, on an average, than for white males in 1967.(5) Population growth, a higher proportion of secondary students completing high school, and the economy's demand for highly trained white collar workers underscore the national objective of making higher education available to all who qualify, regardless of family income, race, or sex. By 1975, enrollments in colleges and universities are projected to exceed 9.5 million, double the figure a decade earlier.(6) For the worker over 40 who was deprived of educational opportunity in his youth, the nation is just beginning to implement goals leading to the development of an adequate adult educational system. The Adult Education Act of 1966 will contribute substantially to attaining objectives in this area. While there were only 200,000 adults participating in federally supported basic adult education programs in fiscal year 1966, enrollment had doubled to about 400,000 in the next two years.(7)

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(4) In 1965 the median school years completed by persons in the civilian labor force 18 years or older was 12.2 years. Manpower Report of the President, 1968, Table B-9, p. 259.

(5) Manpower Report of the President, op. cit.

(6) Lecht, Leonard, Manpower Requirements for National Objectives in the 1970's, Manpower Administration, U.S. Department of Labor, 1968, p. 184.

(7) HEW Release, January 15, 1967; and National Association for Public School Adult Education, 1968 Almanac, p. 27.

All told, outlays for education, private and public, in the United States amounted to over $33 billion in 1962 and to $40 billion in 1966 (in dollars of 1966 purchasing power). Assigning a high priority to attaining goals in education would raise this total to over $90 billion by 1975, or an increase in education's claim on GNP rising from 5.5 percent of the Gross National Product in 1962 to 8.5 percent of the more than a trillion dollar GNP anticipated in 1975.(8) Spending these massive sums to expand the school plant, to adapt curricula to present day needs, to reorganize teacher education, to introduce new technology in education, and to provide more emphasis on research and development would generate employment for persons in virtually every occupational category. These employment requirements in education include close to half a million secretaries, stenographers, and typists; and a quarter of a million cooks. However, over 60 percent of the 7 million persons who would be employed in the mid-1970's would be professional and technical workers. About 30 percent would be non-professional white collar and service workers, and less than 5 percent of the total are expected to be blue collar workers, employees largely engaged in construction and maintenance activities. This distribution of employment is shown in Table 1.

Nearly 4 million of the 7 million total in 1975 would represent professional workers such as teachers and librarians, and another 900,000 would

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(8) 1962 and 1975 estimates derived from Lecht, Leonard, Goals, Priorities, and Dollars, 1966, p. 161. 1966 figure from Trends, U.S. Department of Health, Education, and Welfare, 1966-67 ed., Table 5, p. 43.

consist of aides and technicians. It is these 900,000 nonprofessionals who provide the focus for this working paper.

Table 1

Estimated Employment Associated with the Education Goal, 1962, 1966, and Projected 1975

| Occupational Category | Employment (in 000) 1962(a) | 1966(b) | 1975(a) | Percent of Total in 1975 | Percent Increase 1966-1975 |
|---|---|---|---|---|---|
| Professional and Technical Workers | 2,312 | 2,981 | 4,483 | 64% | 50% |
| Other White Collar and Service Workers | 1,105 | 1,562 | 2,233 | 32 | 43 |
| Blue Collar Workers | 178 | 225 | 290 | 4 | 29 |
| TOTAL | 3,595 | 4,768 | 7,006 | 100 | 47 |

(a) Source: Lecht, Leonard, Manpower Requirements for National Objectives in the 1970's, 1968, Appendix Table 25-4, pp. 346-350.

(b) 1966 data from U.S. Census, Current Population Survey for 1966 (unpublished).

## STRATEGIC VARIABLES INFLUENCING MANPOWER REQUIREMENTS IN EDUCATION

The 1960's have been a period of turbulence in education, with both planned experiment stimulated by federal funding and unplanned innovations deriving from student and minority group dissatisfaction with the schools. The past decade has witnessed a shift in new developments from the emphasis on the bright child and modernization of the physical sciences curriculum in the early sixties, to an increasing concern with the disadvantaged and the social sciences in the mid-1960's. Our objectives for the 1970's will reflect both these emphases. However, manpower requirements for the educational system in the 1970's do not depend on educational objectives alone. They also are influenced by changes taking place in the education delivery system, developments often reflecting the impact of changes in the larger society on education. Figure 1 suggests this relationship between national objectives, changes in the educational system, and the impact of these changes for the employment of nonprofessionals in schools and libraries.

The kinds of jobs available in the schools for persons with less than four years of college in the 1970's will be influenced by the objectives receiving emphasis in education and by the educational services offered to implement these objectives. For example, achieving the objective of near-universal high school education for young people is likely to involve a greater emphasis on team teaching in secondary schools as a means for increasing

Figure 1

Educational Objectives and Manpower Requirements
for Nonprofessional Workers in Schools and Libraries

| Educational Objectives for the 1970's | Changes in Educational System | Implications for Non-Professional Manpower |
|---|---|---|
| Expand opportunities in higher education | Increased use of educational television to teach larger classes in selected courses | Growth in employment for audio-visual and computer technicians |
| Near-universal and more relevant high school education for young people | Greater use of team teaching in large secondary schools | Growth in employment for teachers' aides and assistants |
| | Increased emphasis on vocational education and supportive services in inner city schools | Growth in employment for teachers' assistants, assistant counselors, and aides in vocational education |
| Expand and upgrade primary and pre-primary education | Greater community participation in decision-making in schools | Growth in employment of indigenous workers as home visitors, nursery school aides, and school-community workers |
| | More widespread use of new educational technology, i.e., teaching machines in learning to read | Greater employment opportunities for computer technicians and teachers' assistants |
| Develop adult education as "life-time learning" for many adults | Establish schools as community centers offering programs in literacy education, vocational training, and creative uses of leisure | Growth in employment opportunities for teachers' aides, and assistants in vocational education, arts and crafts, and in English |
| | Provide adequate libraries for the 60 percent of the population with inadequate library service | Greater employment needs for librarian assistants and aides |

the effectiveness of instruction. More widespread use of team teaching would require the employment of many more teachers aides and assistants functioning within the teaching team to relieve professional teachers from routine clerical and custodial duties, and to assist in instruction, for example, in individual reading practice.

Use of the new educational technology in the form of educational television, computer-mediated instruction, or "talking typewriters" can help facilitate the attainment of many objectives in education in the 1970's. These innovations make it possible to free teachers from repetitive instructional tasks, allowing them to take on the role of counselors for students, diagnosticians of individual learning needs, and tutors and elaborators of material. Use of the new technology will provide employment for technical aides to work with the equipment, and for teachers' aides and assistants to monitor busy students, answer specific questions, and give the individual students feedback concerning their performance. In experiments in teaching literacy to young children in Chicago using the talking typewriters, to cite an instance, teen-age girls from low-income neighborhoods have been trained to serve as nursery teachers'aides in the program.

While considerably greater use will probably be made of the new technology in education in 1975 than in 1965, there are a number of reasons for anticipating a gradual advance rather than a transformation of teaching in the coming decade. For one consideration, the new technology is expensive, and general

acceptance would probably involve financial support by the federal government. Widespread use of the new technology in the classroom is also likely to involve far-reaching changes in teacher education to orient teachers to function effectively with the new instructional media. In addition, changes in attitudes would frequently be required since to many teachers and others, the teaching machines and similar devices appear to substitute an impersonal machine for a personalized relationship between student and teacher. Since the suburban schools in the metropolitan centers possess the most adequate financial resources, and the communities they serve are usually quick to adopt technological advances in their everyday lives, there is some likelihood that the suburban school systems will proceed more rapidly than others in making use of innovations in education. Allowing for these caveats, however, the potential market for the new technology in education is so large, that even a moderate degree of acceptance in the 1970's would open up many career opportunities for technicians, assistants, and aides who would serve as part of the team required for effective utilization of these advances.

Reorganization of educational services has also been influenced by our society's greater concern with poverty, and by the civil rights movement in the past decade. A leading authority on the inadequacies of the urban slum schools attended by most nonwhites, Kenneth B. Clark, comments that, even with minimum requirements in such basic subjects as reading and arithmetic, "as things now stand, the vast bulk of the Negro youngsters from the working class, or the lower middle classes, are unable to meet the standards ... for

employment in other than menial lower status jobs." (9) Establishing adequate schools in the central cities capable of breaking through the chain of circumstances through which inadequate education leads to poverty and alienation will involve changes likely to be felt in the educational system for years to come.

Team teaching and ungraded classes are among the innovations that have found a readier tryout because the Negro child in the urban schools has not been reached by more conventional techniques. In large urban school systems serving a heterogeneous population, decentralization of school administration, coupled with measures protecting teachers' welfare, is likely to represent another change fostered by pressures to make the inner city schools more responsive to the needs and wishes of their communities. The participation of the "left out" groups in community affairs, often initially stimulated by the community action programs sponsored under the Economic Opportunity Act, both encourages changes in curriculum and school leadership, and it also leads to greater use of nonprofessionals, as in Head Start programs, or as interpreters between the school, the family, and the community in low-income neighborhoods.

Like classrooms and laboratories, libraries are one of the nation's important educational resources. The American Library Association reported several years ago that some 10 percent of the population had no legal access to public library service, and 62 percent had "had only inadequate service

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(9) Clark, Kenneth B., Social and Economic Implications of Integration in the Urban Slum Schools, U.S. Department of Labor, Office of Manpower, Automation, and Training, 1964, p. 6.

available." Similarly, almost 70 percent of the public elementary schools had no libraries in the mid-1960's. The libraries of half the four-year colleges fell below accepted professional standards in the number of volumes possessed.(10) As in the schools, technological advance is gradually developing a new type of library system, a system centering on automated information and retrieval systems. Meeting recognized standards for library materials in the elementary and secondary schools is estimated to require a fourfold increase in current expenditures in our major cities, and a doubling of per capita expenditures to attain standards of minimum adequacy in public library service. (11) Achieving these goals in library service could lead to employment in the 1970's for close to 400,000 persons with less than a four-year college education as library assistants and aides, and as technicians in the new information systems.

In the past, according to a recent conference on nonprofessional human service occupations, a major barrier to growth in opportunities in these fields has been "professional resistances and fears, legal barriers, and certification requirements."(12) Within education, teachers' organizations have sometimes feared that acceptance of the nonprofessionals might provide a basis for increasing class size, or that their use would reduce the teachers' associations' bargaining power and, consequently, their prospects for obtaining improvements in compensation. Yet, in a poll of teachers taken in 1968

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(10) President Johnson's Message to Congress on Education, 1965.

(11) Lecht, Leonard, Goals, Priorities, and Dollars, op. cit., p. 153.

(12) Lynton, Edith F., The Subprofessional: From Concept to Careers, National Committee on Employment of Youth, 1967, p. 142.

to determine needs for in-service training, the teachers responded that they needed training most in learning to work effectively with aides.[13] The attitudes underlying these responses, together with the general recognition of the need for changes in educational services to provide the kind of education which is relevant in our increasingly urbanized society strengthens the probability of more widespread use, and an improved status, for persons in subprofessional and technical occupations in education in the coming decade.

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(13) National Education Association, "Teachers' Needs for In-Service Training," NEA Research Bulletin, October, 1968.

## MANPOWER NEEDS FOR EDUCATION IN THE 1970's

Manpower requirements in virtually every occupation which is related to teaching and learning will increase substantially in the next ten years. All told, by 1975, 4.8 million persons are expected to be employed in professional, subprofessional, and technical occupations directly related to education and library service. Taking into account replacement needs because of losses due to normal turnover, an estimated 1.1 million career openings are projected to develop for subprofessionals and technicians between 1966 and 1975.

The estimated employment in the occupations directly related to education is summarized in Table 2. The projections for 1975 show the employment which could be expected to arise if education were to receive a high priority among the nation's goals in the coming decade. More detailed estimates are presented in Appendix Table 2.

Employment for professional workers in education is expected to grow rapidly in the coming decade, by over half, with especially large increases anticipated for counseling and guidance specialists, librarians, and college teachers. Overall job opportunities in the nonprofessional occupations are considerably fewer than for professionals but they are likely to grow at a much more rapid rate. The largest single field in the nonprofessional category is the teachers' aides and assistants. This is also the occupation with the

Table 2

Estimated Employment in Occupations Directly Related to Education, 1962, 1966, and Projected 1975

| Occupational Category | Number Employed (in 000) 1962[a] | 1966[b] | 1975[a] | Percent Increase 1966 to 1975 |
|---|---|---|---|---|
| Professional Occupations: | | | | |
| College Teachers | 172 | 264 | 438 | 66% |
| Elementary and Secondary Teachers | 1,574 | 1,872 | 2,750 | 47 |
| Other Teachers[c] | 240 | 297 | 447 | 51 |
| Guidance and Counseling Specialists | 16 | 25 | 55 | 120 |
| Librarians | 87 | 102 | 196 | 92 |
| Total, Professionals | 2,089 | 2,560 | 3,886 | 52 |
| Nonprofessional Occupations: | | | | |
| Teachers' Aides and Assistants[d] | (e) | 80 | 414 | 417 |
| Library Aides and Assistants[f] | (e) | 170 | 299 | 76 |
| School and Library Technicians | 21 | 73 | 187 | 156 |
| Total, Nonprofessionals | 21 | 323 | 900 | 179 |
| TOTAL, All Occupations | 2,110 | 2,883 | 4,786 | 66 |

(a) Sources, unless otherwise indicated, are from Lecht, Leonard, Manpower Requirements for National Objectives in the 1970's, op. cit.

(b) Unless otherwise indicated, source is U.S. Census, Current Population Survey, 1966 (unpublished).

(c) Refers to art, dance, music, and sports teachers.

(d) Source: Reissman, Frank, New Careers, A Basic Strategy Against Poverty, 1968, op. cit.

(e) Not available.

(f) Source: Occupations in the Field of Library Service, Bureau of Employment Security, U.S. Department of Labor, 1968, op. cit.

highest projected growth rate. The 400 percent growth listed for employment requirements in this category is unusually high. A percentage increase of this magnitude stems from the limited utilization of the aides and assistants in the mid-1960's, and the belief that most of the potential changes in educational services imply considerably more widespread use of these nonprofessionals. This employment projection for the 1970's is about a third less than a comparable estimate by Frank Reissman, a leading student of the new career-type occupations.(14)

The estimates for teachers' aides and assistants are based on a survey of 217 large school systems in 1966.(15) The survey indicated that, on an average, these schools employed one nonprofessional for every nine teachers. A concerted effort to improve the urban schools would probably increase the ratio of support personnel to assistants. In many inner city schools, it would sometimes be desirable to provide one support person for each teacher. Accordingly, on a nationwide basis the projections assume an increase in the ratio of aides and assistants to teachers reaching 2 to 15 by 1975.

In the past, library assistants and aides, the second largest nonprofessional group, have been largely utilized in routine clerical duties as pages, shelving assistants, or as registration clerks. As many large and more specialized libraries adopt the new automated technology, requirements

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(14) Reissman, Frank, New Careers: A Basic Strategy Against Poverty, 1968, p. 7.

(15) National Education Association, Research Bulletin, Vol. 45, No. 2, May 1967, p. 37.

for these nonprofessionals will continue to grow, but they are expected to grow somewhat more slowly than for librarians. Developments in information storage and retrieval systems, such as the Medlars System at the National Library of Medicine in the early 1960's, will foster a considerably more rapid growth for library technicians at different levels of skill and training. Reflecting the anticipated gradual introduction of new technology in the classroom, audio-visual and computer technicians are expected to account for about 50,000, or slightly under half, of the projected employment growth for school and library technicians.

To assess education and training needs for these nonprofessionals, account must also be taken of the turnover of personnel as well as the employment growth. The personnel turnover, and, consequently, the replacement demand, is likely to be relatively high for teachers' aides and assistants, and for the equivalent library occupations. Low earnings, lack of job security, and the practice of employing many part-time workers account for the high turnover. Turnover rates are probably less for the more highly skilled educational technicians because of the presence of more full-time and better paid workers. Allowing for this turnover at an annual rate of approximately 10 percent for aides and assistants, and half that rate for technicians, there would be a total of 1.1 million career openings in the nonprofessional education occupations in the period under consideration -- about 575,000 due to employment growth and 525,000 because of replacement demand.(16)

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(16) An 8 percent replacement rate is reported for classroom teachers. See Projections of Educational Statistics, 1967-1977, U.S. Office of Education, 1968, p. 52.

This is the equivalent of an annual average of 110,000 job openings a year arising from employment growth and normal attrition. If the employment rate for nonwhites in these occupations were equal to their anticipated representation in all service occupations (other than private household work) in 1975, 20 percent of the total, there would be an annual average of 22,000 job openings as aides, technicians, and assistants which would be filled by nonwhites.

Unlike the situation in the health occupations or in the social welfare field, the bulk of the employment increase for nonprofessionals in education is expected to occur for reasons other than manpower bottlenecks. A leveling off of enrollment in elementary and secondary schools, coupled with rapid growth in the number of college graduates will contribute to an easing of overall teacher shortages at the elementary-secondary level in the 1970's. However, shortages will probably continue to exist for teachers in many specialized areas. In more than half of the 44 states reporting in a recent national survey, special education, industrial arts, and school library service constituted the critical shortage areas. Many large school systems also listed positions in mathematics, and in the cluster of trade-industrial-vocational assignments as "extremely difficult" to fill.(17) Shortages of professional manpower are likely to continue as an important factor in the employment of nonprofessionals in school and nonschool libraries. A survey in the mid-1960's indicated that there were ten or more openings in libraries

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(17) Teacher Supply and Demand in Public Elementary and Secondary Schools, Fall, 1968, National Education Association, September, 1968.

for each graduate in the field of library science.(18) While nonprofessionals cannot be expected to fill vacancies requiring certified professional personnel in short supply, their employment can make it possible to more efficiently utilize the available professional staff by freeing them from many routine duties. Aside from this role, career opportunities for aides and assistants will grow because they will be increasingly employed in new and more challenging capacities as educational services change in the 1970's.

A recent study of the work performed by teachers' aides makes it apparent that their current duties are largely confined to less skilled clerical tasks, and to simple monitoring and housekeeping responsibilities.(19) Their ten most common duties, arranged in descending order of frequency, were reported to be:

(1) Duplicating tests and other materials

(2) Helping with classroom housekeeping

(3) Typing class materials, tests, etc.

(4) Setting up audio-visual equipment and other instructional materials

(5) Helping with children's clothing

(6) Supervising the playground

(7) Correcting tests, homework, workbooks, etc.

(8) Reading aloud and story telling

(9) Assisting in the school library

(10) Collecting money from pupils

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(18) Occupations in the Field of Library Science, Bureau of Employment Security, U.S. Department of Labor, 1964, p. 3.

(19) Research Bulletin, National Education Association, Vol. 45, No.2, May, 1967, p. 38.

During the next ten years the responsibilities of teachers' aides are likely to include a role as home visitor aides, and as interpreters between the school and the community. Teachers' assistants will frequently function as part of teaching teams in the larger schools assisting individual students or small groups of students to read, often with the aid of teaching machines, to acquire verbal and numerical skills, and to participate in arts and crafts courses. Programs along these lines offer the best opportunities for an improvement in compensation and career status.

The terms "teacher's aide" and "teacher's assistant" are often used interchangeably. This usage reflects the absence of a clear-cut and generally agreed-upon definition of the role of nonprofessionals in the schools, and also the recency of the experience in employing them on any significant scale. As employment for these workers increases in the 1970's, it is anticipated that two more or less distinct occupations will emerge. As at present, the teachers' aides will provide routine clerical and monitorial assistance to teachers and school administrators. Others will be utilized as indigeneous workers similar in many respects to social worker aides, i.e., as the educational equivalents of neighborhood workers and home visitors. The teachers' assistants' duties will involve an instructional fuction performed under the supervision of a professional teacher. A similar differentiation can be expected to develop among educational technicians. Highly skilled computer and audio-visual technicians will work assisted by technical aides and apprentices. These differences in responsibilities will involve different levels of educational and training requirements for a family of nonprofessional occupations concerned with education.

## IMPLICATIONS FOR VOCATIONAL-TECHNICAL EDUCATION

The anticipated employment increases in the nonprofessional occupations in education contrast with a limited number of formal training programs currently available in the schools in these fields. The gap between the projected career openings and the training programs indicates an area of need for planning to establish new programs in vocational-technical education.

Training for teacher assistants was being provided in the mid-1960's by at least fifty junior colleges and colleges,(20) generally independently of the federally supported vocational-technical education system.(21) Many were experimental programs, usually two-year courses leading to an Associate in Arts degree. A typical two-year curriculum included about 64 credit hours, primarily in English, psychology, child development, and social studies. In some instances the coursework was accompanied by field practice. About half of the institutions offering these programs concentrated on pre-school education, while most of the others prepared students for employment in elementary schools. Teachers' assistants completing these curricula are ready to work as a subordinate teacher coping with small groups on specific subjects while the teacher works with the rest of the class. Only three of the courses were for audio-visual technicians.

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(20) Estimate of junior college participation in training school and library assistants based on unpublished data prepared by Communication Service Corporation for the American Association of Junior Colleges.

(21) Aside from the federally supported vocational education system, there is some federal support for these programs under the Educational Professions Development Act.

There are few specific programs in the schools, and particularly in the high schools, for teachers' aides. Training, especially for part-time workers and in New Career programs, is often sporadic, informal, and unstructured. Frequently, it is offered on an ad hoc basis in the employing schools. Many teachers' aides, especially in the central city schools, have been recruited among students in work-study programs in the local schools or from community-action-type program participants.

Junior colleges have also introduced librarian assistant programs. It has been estimated that at least 90 post-high school institutions offer library courses leading to associate degrees. Educational requirements for the semi-clerical aide occupations in libraries, such as page, shelving supervisor, or registration clerk normally consist of high school graduation plus up to one year of training, training often offered on the job. Again, there are few high school vocational programs in this area.

The lack of standardization in training and in duties in these occupations is illustrated by the current educational requirements for persons performing what are essentially teachers' aide duties. According to a 1966 report, about a third of the school systems using such personnel required only an elementary education. However, close to a fifth required a college degree.(22) The establishment of vocational-technical education programs in the education field would help to meet manpower needs, to standardize training requirements,

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(22) Research Bulletin, National Education Association, op. cit.

and to encourage the establishment of career lines by relating education and training to a family of occupations which hold promise of developing genuine career ladders.

Figure 2 suggests several illustrative career ladders for nonprofessional occupations in education and library service which indicate potentials for planning in vocational-technical education to meet needs in the coming decade. Three of the ladders relate to careers within the schools in instructional, administrative, and technical assistance work. Since the library occupations make up a distinct group with career opportunities and educational requirements which are unique to the library system, they are shown as a separate ladder. Where feasible, the occupational titles are related to Dictionary of Occupational Titles code numbers for the same or closely-related occupations.

It is apparent from Figure 2 that the beginning level of training for work in inner city schools should involve vocational education programs in secondary schools. By introducing programs along these lines, the training of teachers' aides would shift from the current informal conferences with school personnel, or 6 to 12 week special institutes, to a formal high school level program of one or two years' duration, or to a one-year post-high school curriculum. Much of the course content of these programs could be adapted from the current child development curriculum. Comparable courses for library aides would prepare high school students for what are already a sizeable number of beginning level jobs in the nation's libraries. Much of the training for

Figure 2

Illustrative Career Ladders in
Occupations Related to Education

| | Direct Instruction | Administrative Support | Technical Assistants | Library Occupations |
|---|---|---|---|---|
| Four years of college or more | Teacher (092.228) | Principal (091.118) | Professional Support, computers (012.168) (b) | Librarian (100.168) |
| Junior college - 2 year programs | Teacher Assistant, (elementary or secondary schools) (099.228) (b) | Administrative Assistant (a) | Educational Assistant, computer technology (219.388) (b) | Librarian Assistant (100.368) |
| Junior college - 1 year certificate - or post-secondary vocational school | Teacher Aide (kindergarten or elementary) (099.228) (b) | Educational Aide (clerical support) (219.388) (b) | Technician, audio-visual (729.281) | Library Technician (a) |
| High school vocational, or special federal programs | Teacher Aide, child-care (pre-school) (159.228 or 359.878) (b) | Educational Aide, special education programs (209.388) (b) | Educational Aide, audio-visual (a) | Library Aide (109.687) |

(a) No current D.O.T. job title or code number which is relevant for occupation listed in a school or library content.

(b) D.O.T. code given for a comparable or equivalent occupation.

the more skilled aide and technician occupations in schools and libraries will probably require at least one year of post-high school education. The two-year junior college courses leading to an Associate in Arts degree would offer programs leading to employment as teachers' assistants, librarians' assistants, or as technicians capable of assuming responsibility for the everyday operation of computer-mediated instructional and information systems, and similar equipment. To be successful in developing attractive career prospects for nonprofessionals, courses in the vocational high school and junior college programs, and employment in the field, should carry a minimum of credit acceptable in education and library science programs leading to the B.A. or M.A. degree. Similarly, junior colleges should allow some credit to persons who have taken the prescribed high school vocational courses, with additional credit if the coursework has been followed by a year or more of relevant employment in schools or libraries.

As in the comparable health and social welfare occupations, proposals to establish curricula to train subprofessionals and nonprofessionals in education sometimes appear to be aimed at encouraging young persons to prepare for occupations which are frequently poorly paid, whose duties are often ill-defined, and with an outlook for job security and promotion which, at present, is surrounded by considerable uncertainty. Yet, establishing training programs in expanding fields which serve important social needs can be a strategic influence in enhancing the status of an occupation. Occupational training is important, in part, because it imparts skills and techniques. In

an increasingly mobile and impersonal society, it also serves as a means for demonstrating the possession of the entrance credentials needed to perform a group of tasks at a specific level of skill and responsibility. Possession of these credentials, according to Nils Kellgren, a Swedish authority and a consultant to the American Secretary of Labor, has come to mean "placing a label on a person. With this label he is invited to the working life and is accepted." (23) This kind of acceptance based on demonstrated proficiency in completing a vocational education program offers a significant opportunity for improving the economic status of the new non-professional fields in education.

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(23) Kellgren, Nils, "An Active Labor Market Policy," Memorandum to the Secretary of Labor, 1963, p. 61.

## PRIORITIES FOR VOCATIONAL-TECHNICAL EDUCATION

The manpower projections in education underscore an important area of concern for the vocational-technical education system. The extent to which these projections are borne out in the 1970's depends on a number of developments during the coming decade. First, the estimates of career openings assume that our society will assign a high priority to implementing goals in education during the next ten years. Second, the projections presuppose an expansion of educational services at all levels, and especially at the preschool and elementary level. It is assumed that the new services, like the use of the new educational technology, will represent a long-term change in the delivery system in American education, and particularly so in the large cities. Third, widespread utilization of the aides and assistants also assumes greater federal support for the schools, and a growing acceptance of persons in the new occupations by the certified professionals in the schools and libraries. In view of developments in the 1960's, including the continuing concern for the education of disadvantaged children, and the acceptance of experimental programs when they have been well planned and implemented, it is believed that the assumptions and the projections are reasonable ones.

Translating these projections of potential career openings into employment in schools and libraries implies a number of choices -- of priorities -- in vocational education in the next few years, if the nation's needs for

manpower in education and for career openings are to be satisfied. They include the following as high-priority considerations:

(1) There is a need for more active involvement of the vocational-technical education system in the training of aides, assistants, and technicians for employment in schools and libraries.

(2) Programs offering the best prospects for success are those centering on specific areas such as pre-school education, or special education, rather than those concentrating on training general helpers for the conventional classroom teachers or librarians.

(3) High school vocational programs should include curricula preparing young persons for employment as education or library aides. The educational aide curriculum could be developed with a minimum of duplication by making use of the home economics courses in child development.

(4) Junior colleges can anticipate growing needs for teachers'and librarians' assistants, and for technicians, by establishing and expanding programs leading to an Associate Degree in these fields. Course proliferation can be minimized by integrating this training with other curricula, i.e., the electronics curriculum for educational technicians.

(5) There is a need to articulate programs in post-high school institutions with vocational offerings at the secondary level, and to coordinate both with the operations of the local public schools and libraries.

(6) New and expanded programs in the next few years should be concentrated in the large cities where the need is greatest.

Appendix Table 1

Estimated Employment, by Major Occupational Group, for the Education Goal, 1962, 1966, and Projected 1975

| | Number Employed (in 000) | | | Percent Increase |
|---|---|---|---|---|
| | 1962(a) | 1966(b) | 1975(a) | 1966 to 1975 |
| White Collar Workers | 2,799 | 3,770 | 5,539 | 46% |
| Professional and technical workers | 2,312 | 2,981 | 4,483 | 50 |
| Managers, officials and proprietors(c) | 91 | 133 | 166 | 25 |
| Clerical workers | 389 | 647 | 880 | 36 |
| Sales workers | 7 | 9 | 10 | 11 |
| Blue Collar Workers | 178 | 225 | 290 | 29 |
| Craftsmen and foremen | 113 | 119 | 198 | 66 |
| Operatives | 37 | 47 | 53 | 13 |
| Laborers(d) | 28 | 59 | 39 | -34 |
| Service Workers | 618 | 773 | 1,177 | 52 |
| TOTAL | 3,595 | 4,768 | 7,006 | 47 |

(a) Lecht, Leonard, Manpower Requirements for National Objectives in the 1970's, U.S. Department of Labor, 1968.

(b) Unpublished U.S. Census Current Population Survey data.

(c) Except farm

(d) Except farm and mine

Appendix Table 2

Estimated Employment in Occupations Directly Related to Education, 1962, 1966, and Projected 1975

| Occupational Category | Number Employed (in 000) 1962 | 1966 | 1975 | Percent Increase 1966 to 1975 |
|---|---|---|---|---|
| Professional Occupations: | | | | |
| College teachers | 172 | 264 | 438 | 66% |
| Teachers, elementary | 977 | 1,135 | 1,693 | 49 |
| Teachers, secondary | 597 | 737 | 1,057 | 43 |
| Teachers, secondary vocational | (70) | (125) | (350) | 180 |
| Teachers, other | 240 | 297 | 447 | 51 |
| Art | (a) | (36) | (56) | 56 |
| Dance | (a) | (2) | (3) | 50 |
| Music | (a) | (158) | (228) | 44 |
| Sports | (a) | (101) | (160) | 58 |
| Counseling and guidance specialists | 16 | 25 | 55 | 120 |
| Librarians | 87 | 102 | 196 | 92 |
| TOTAL, professionals | 2,089 | 2,560 | 3,886 | 52 |
| Nonprofessional Occupations: | | | | |
| Teachers' aides | (a) | 45 | 235 | 422 |
| Teachers' assistants | (a) | 35 | 179 | 411 |
| Educational technicians | 21 | 43 | 91 | 112 |
| Library technicians | (a) | 30 | 96 | 220 |
| Library aides and assistants | (a) | 170 | 299 | 76 |
| TOTAL, nonprofessionals | 21 | 323 | 900 | 179 |
| TOTAL, all occupations | 2,110 | 2,883 | 4,786 | 66 |

(a) Not available

Sources: 1962 and 1975 data - unless otherwise indicated, Lecht, Leonard, Manpower Requirements for National Objectives in the 1970's, op. cit.

1966 data - unless otherwise indicated, U.S. Census, Current Population Survey (unpublished).

Teachers, secondary vocational - from Notes and Working Papers Concerning the Administration of Programs Authorized Under the Vocational Education Act of 1963 (Barlow Report), 1968, p. 294.

Library aides and assistants - from Occupations in the Field of Library Service, op. cit.

Teachers' aides and assistants, derived from Research Bulletin, National Education Association, May, 1967, op. cit., and Reissman, Frank, New Careers, op. cit.